

ZOOLOGY.—*Studies on the egg-laying habits of the fairy shrimp.*¹
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During the course of life-history studies on the fairy shrimp *Eubranchipus vernalis*, certain data concerning egg-laying by this form were collected. It is the purpose of this paper to present these data.

In the female shrimp the eggs pass anteriorly through ducts on each side of the body until they come to lie in the brood pouch, which is a conspicuous saclike appendage located on the ventral surface of the female just posterior to the last pair of phyllo-pods. Located within the brood pouch is a horizontal paddlelike structure, pivoted at the center, which is in continual motion as long as eggs are present in the pouch. Its function is apparently that of keeping the eggs well aerated.

When they first enter the brood pouch the eggs are small, light-gray spheres. After a day or more they become almost twice as large and assume their final light-brown color. At the time of egg-laying, all the mature eggs in the brood pouch are expelled. Of all the shrimps under observation, only one (shrimp 6) expelled small, gray, apparently unfertilized eggs.

All the shrimps used in the experiment were of the same species, *E. vernalis*, and were collected from the same pond. Whenever possible, immature shrimps were selected to ensure the collection of all eggs laid during the life of the individual. Because of the difficulty of obtaining suitable food, large numbers of these young shrimps died before reaching the egg-laying stage. Only those that laid eggs are considered. For comparative purposes, several young mature shrimps were used. The mature and immature were separated on the basis of size, development of the claspers in the male and of the brood pouch in the female, and on general appearance. That these criteria were sufficient was later shown by the fact that within eight days after isolation all shrimps classified as mature had laid eggs.

In practice, one male and one female shrimp of approximately the same size were placed together in a 500-cc beaker containing either filtered pond water or conditioned tap water. Preliminary trials indicated that a temperature of 50°–58° F. was satisfactory for egg-laying. All shrimps were therefore kept within this temperature range.

The eggs, being heavier than water, sink to the bottom of the beaker. Examinations were made at frequent intervals and any eggs

¹ Received September 11, 1939.

TABLE 1.—DATA ON EGG-LAYING BY *Eubranchipus vernalis*

Shrimp No.	Date iso-lated	Age ¹	First batch		Second batch		Third batch		Fourth batch		Fifth batch		Sixth batch		Total No. of eggs	Aver- age per batch	Date of death
			Date	No.	Date	No.	Date	No.	Date	No.	Date	No.	Date	No.			
11	3/15	M	3/17-18	8	3/24-26	9	3/26-27	24	4/7-8	21	4/11-15	23	4/16-20	10	95	16	4/29
18	3/19	M	3/19-23	9	3/26-27	16	4/5-6	10	4/7-8	11	4/16-20	12			58	11.6	4/29
14	3/14	M	3/17-18	12	3/19-23	16	3/26-27	11	4/6-9	3					42	10.5	4/15
23	2/27	I	4/6-9	16	4/9-11	8	4/15-20	6	4/29-30	10					40	10	5/10
31	2/27	I	4/6-9	5	4/11-13	14	4/15-20	12	4/22-26	26					57	14.2	5/15
6	2/27	I	4/11-15	38	4/16-20	7	4/29-30	6 ²							51	17	5/15
13	3/15	M	3/17-18	37	3/19-23	19	3/24-26	6							62	20.6	3/29
15	3/15	M	3/19-23	17	3/24-26	15	4/11-15	4							36	12	4/15
24	2/27	I	4/6-9	14	4/11-15	4	4/16-20	3							21	7	4/20
16	3/15	M	3/17-18	19	3/19-23	13									32	16	3/27
30	3/26	I	4/5-6	17	4/9-11	3									20	10	4/15
25	3/19	M	3/24-26	5											5		4/11
28	3/19	I	3/26-27	14											14		4/3
29	3/19	I	4/1-2	51											51		4/15

¹ I, immature when collected; M, mature when collected.

² Several light-gray apparently unfertilized eggs also found on this date.

found were removed with a pipette and counted. The results are shown in table 1.

These results show definitely that in *E. vernalis* the eggs are not retained in the brood pouch until released by the death and disintegration of the female, as has been reported for some shrimps. Neither have there been any cases observed in which the eggs hatched while retained within the brood pouch.² Unsuccessful attempts were made to hatch the eggs immediately after they had been laid. However, the writer has observed eggs laid in March hatch in November.

Six distinct depositions of eggs were laid by one female shrimp (shrimp 11) during the period between March 18 and April 20. An average of three batches of eggs was laid by each of 14 shrimps. The average number of eggs laid by each shrimp was 41.7 with approximately 14 eggs a laying. In the group collected as mature shrimps, females laid an average of 13.75 eggs a batch. In the group collected as immature shrimps the corresponding figure was 14.1. While there was no significant difference in the number of eggs to the batch, the individual shrimps in the group collected as mature specimens produced more batches, resulting in a greater average number of eggs to the individual. The greatest number of eggs laid by a female at one time was 51 (shrimp 29). However, during the spring of 1938 a mature shrimp was collected that laid 118 eggs during a 24-hour period. Another shrimp collected during the same season laid 165 eggs in two batches over a 5-day period. Such variations are probably caused by environmental factors.

² MORGAN, A. H. *Field book of ponds and streams*. 448 pp. 1930. Putnam's, New York.